Geriatric Horse Diseases and Management

Dr. Ashley Wegmann (Connell), DVM

What is a Geriatric Horse?

- Jury is out on what age qualifies as geriatric
  - Researchers - 15 years and older
  - Owners - 23 years and older
- Breed specific age
  - No breed has the "longevity gene"
  - Ponies and Mules - high percentage of animals >30 years of age
  - Smaller body size and originally from areas that require harder nature

Common Geriatric Ailments

- General "old age" signs
  - Decreased "spontaneous activity"
  - Loss of "top line" muscles - possibly secondary disease
  - Graying hair coat
  - Stiffness
- Most common body systems affected by aging:
  - Gastrointestinal system (GI)
  - Musculoskeletal system
  - Respiratory system
Gastrointestinal

- Colic most common reason for GI issues
  - Intestinal volvulus
  - Displacements
  - Ruptures
- 45% of horses 20 years or older present for large colon problems (Paradis 2013)
  - 42% small intestinal problems
    - 44% of them strangulating lipomas
    - Also present are gastric lesions - ulcerations and neoplasia
- 40% small intestinal problems

Gastrointestinal - Dental Disease

- Largest reason for large colon impaction and esophageal choke in older horses
  - 55% of horses >15 years have dental abnormalities (Paradis 2013)
  - 15% of owners report their horses exhibiting quidding
- Types of dental abnormalities
  - Smooth mouth
  - Wave mouth
  - Step mouth
  - Hooks
  - Shear mouth
  - Equine Odontoclastic Tooth Resorption and Hypercementosis (EOTRH)

Dental Abnormalities

- Smooth mouth:
  - Occurs over time from normal wear of enamel ridges
  - May be hastened by chronic ingestion of sand or overly aggressive floating practices
Dental Abnormalities

- Wave Mouth:
  - Uneven wearing of cheek teeth
  - Molars are permanent teeth
  - The upper 4th cheek tooth is the oldest tooth in the mouth
  - Often first to be worn to the gum line with the lower opposing tooth longer creating an arcade that wears and grinds abnormally

Dental Abnormalities

- Step Mouth:
  - Caused by an absence of one tooth and the overgrowth of opposing tooth

Dental Abnormalities

- Hooks
  - Response to malocclusion of the dental wear and decrease in wearing surfaces
  - Typically first upper cheek tooth and lower sixth cheek tooth
Dental Abnormalities

- **Shear Mouth**
  - Lingual points of lower teeth come in contact with hard palate
  - Laceration of gums or palate typically occur

- **Equine Odontoclastic Tooth Resorption and Hypercementosis (EOTRH)**
  - Painful disorder of incisor and canine teeth
  - Etiology unknown
  - Possibly related to periodontal inflammation
  - Extraction of affected teeth is treatment of choice
  - Early pain may only be seen with bridling
    - Can severely affect attitude and later on, eating habits

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**Nutritional Management**
Weight and Diet Concerns with a Geriatric Horse

- Most common issues is obesity
- Nutritional requirements may not differ from younger adult
  - Problems arise when the older individuals are not normal
    - Obesity and insulin resistance increase risk for laminitis
    - Decreased ability to digest foods

Types of feed

- Extruded form of feed
  - Increase surface area for feed pellets to be exposed to digestion
- Prebiotic/probiotic increase digestive flora
- Higher protein for decreased muscle mass
- Certain amino acids added, ex. lysine and biotin
  - Help with muscle maintenance, haircoat, and hoof care
- Complete feeds to help horses with poor ingestion of long-stem roughage
  - Poor dentition
- Fat added to increase caloric input

Weight Loss Concerns in an Older Animal

- Decreased intake:
  - Lack of good quality feed
  - Poor appetite - secondary to debilitating disease
  - Malnutrition
  - Malabsorption
- Reasons for increased utilization
  - Environmental (cold/heat)
  - Increased level of exercise
  - Increased catabolism secondary to debilitating disease
    - Ex. Recurrent airway obstruction (RAO)
  - Increased respiratory rate and effort increase the caloric need
  - May not take time away from breathing to reach caloric need
Weight Loss Concerns in an Older Animal

- Abdominal Neoplasia
  - Lymphosarcoma
  - Squamous cell carcinoma
  - Adenocarcinoma
  - Melanoma
  - Mesotheloma

- Need diagnostic work up
  - Grain and forage analysis
  - Blood work: CBC/Chemistry panel
  - Rectal palpation/ultrasound exam
  - Abdominal masses or intestinal strictures
  - Abdominal ascites
  - Gastroscopy
    - Stomach ulcers and squamous cell carcinoma of stomach
  - Rectal history
  - Rectal inflammation
  - Exploratory laparotomy

Musculoskeletal Disorders of the Geriatric Horse

- Second most common complaint
- Laminitis
- Lameness classified as degenerative disease
  - Navicular disease
  - Degenerative Suspensory Ligament Desmitis
  - Typically seen in straight hock conformation and progressive sinking of fetlocks
- Earlier injury to joints, muscles, tendons, and ligaments can set up for progressive degenerative changes
  - Osteophyte formation
  - Cartilage changes

Respiratory Problems of an Older Horse

- 3rd biggest issue in older horses
- Recurrent airway obstruction (RAO)/heaves seen in all ages, but is a risk factor
  - Inflammatory airway disease similar to asthma in humans
  - Inflammation of the airway plus bronchoconstriction leads to severe obstruction
  - Clinical signs:
    - Increased respiratory rate and effort
    - Cough
    - Development of hypertrophied muscle along ventral rib cage
    - Exercise intolerance
    - Increased crackles and wheezes in the lungs
Respiratory Problems of an Older Horse

- **Treatment of RAO:**
  - Aimed at decreasing inflammation and bronchoconstriction
  - Reduction of environmental allergens is main objective in treatment
    - 24 hour turn out
    - Eliminating hay from diet
    - Improving ventilation
    - Decreasing dust

- **Treatment of ROA:**
  - Oral inhaled steroids primary anti-inflammatory drug of choice
    - **Systemic drugs:** Dexamethasone, prednisolone
    - **Inhaled drug:** beclomethasone (steroid of choice)
  - Bronchodilation
    - Albuterol (inhaled most effective)
    - Clenbuterol (oral)
    - Aminophylline (oral)
  - Supplements
    - Arenus Aleira
    - Equishield SA
    - Platinum SA

Ophthalmology in the Older Horse

- 94% of horse over 15 years of age have at least one eye abnormality (Paradis 2013)
- Degeneration of vitreous most common
  - Recurrent uveitis
  - **Senile retinopathy**
    - Irregular linear hyperpigmentation in the non-tapetal fundus
    - Depletion of pigment in adjacent areas
  - **Cataracts**
    - 58% of geriatric horses have evidence of cataracts (Paradis 2013)
    - Median age for bilateral cataracts was 25 years of age
Immunosenescence in Older Horses

- Describes the changes that occur in the immune system with advanced age (Mcfarlane 2013)
- Pituitary and adrenal hormones are strong modifiers of immune function
  - Other considerations affecting immune function:
    - Diet, endoparasite load, medications, nutritional supplements, exercise, season, transport, housing, and environment

Immunosenescence in Older Horses

- Total lymphocyte populations decrease in aged horses
  - CD4, CD8 and B-cells
    - CD4 are helper T-cells and CD8 are killer T-cells
    - B-cells are memory cells producing antibodies
- Decreased ability of lymphocytes to proliferate
- Decreased neutrophil function
  - Increased frequency of bacterial diseases, such as abscesses and sinusitis

Immunosenescence in Older Horses

- Vaccine responsiveness
  - Decreased ability to develop adequate titers after vaccination
  - Influenza infection greater in aged horses
    - Less robust reaction to the vaccine
    - Decreased IgG and IgG \( \beta \)
- Increased risk of neuropathic equine herpes virus (EHV-1) infection
- Important to minimize infectious risk by a complete and appropriately administered vaccine schedule
Endocrine Disorders

- Most common:
  - Pituitary pars intermedia dysfunction (PPID or equine cushing's)
  - Equine metabolic syndrome (EMS)
    - Insulin dysregulation
      - Hyperinsulinemia
      - Insulin resistance (IR)

Pituitary Pars Intermedia Dysfunction (PPID)

- A slowly progressive degenerative disease of the hypothalamic dopaminergic neurons
- Leads to hyperplasia and adenoma formation of the pars intermedia
- 20% of horses over 15 years of age have PPID
- No apparent breed or sex predilection

PPID

- Clinical Signs:
  - Hypertrichosis
  - Loss of topline musculature
  - Hair color changes and patchy shedding
  - Chronic laminitis
  - Suspensory ligament breakdown
PPID

Diagnosis:
- Bloodwork looking at adrenocorticotropic hormone (ACTH) concentrations
  - Interpretation at baseline and after stimulating
  - ACTH concentrations increase in autumn of healthy and PPID animals
  - Outside of natural stimulation season, requires looking at ACTH levels after TRH stimulation

Treatment:
- FDA approved Prascend (1mg pergolide)
- Compounded pergolide (may require a higher dose to control PPID)
- Can have increased ACTH concentration by 48 hours after a missed dose
- Diet and exercise
- Assessment of body condition score
- Assess for concurrent EMS
- Stress, excitement and trailering can cause transient increase in ACTH levels
  - Laminitis can also increase ACTH concentrations
  - Wait 30 minutes prior to testing after trailering/excitement
  - Wait 24 hours after painful event prior to testing

Equine Metabolic Syndrome (EMS)

Collection of risk factors
- Obese 6-9/9 BCS/regional adiposity
- Hyperinsulinemia - associated laminitis (HAL)
- Insulin dysregulation (ID)
- May coexist with PPID, exacerbating ID
- Interaction between genetic and environmental factors
- Pasture-associated laminitis (PAL)
- Sugars and fructans in pasture increase blood insulin concentrations
- Clinical signs
  - Obesity
  - Stretching of digital lamellae due to sustained hyperinsulinaemia
Equine Metabolic Syndrome

- **Tests:**
  - Baseline blood insulin levels
    - No grain given in last 12 hours
    - If clinical signs are present and baseline is normal range, recommend dynamic testing due to low sensitivity
  - Oral sugar test (OST)
    - Baseline insulin (3-6 hours fasting prior to test)
    - Collect blood at 60 and 90 minutes post oral corn syrup administration
    - Measure insulin and glucose
  - Insulin tolerance test (ITT) - doesn’t require fasting
    - Collect baseline blood glucose
    - Measure glucose levels 30 minutes after administering insulin
      - Risk of hypoglycemia
      - Need to monitor patient during and after test

Patient Example

- **Gelding**
- **Age:** 22 yrs
- **Clinical signs:**
  - Increased body fat deposition
  - Recurrent lameness has been a previous issue
- **Test ACTH and baseline insulin**
  - PPID present
  - Mid range insulin levels
    - Suspect increase in insulin due to PPID
- **Plan:**
  - Start on Prascend
  - Monitor for ID
  - Can do a dynamic test to confirm ID once PPID is regualted

Equine Metabolic Syndrome

- **Diet**
  - Restricted grazing - may need to eliminate all together if severe ID
  - Feed grass hay with low non-structural carbohydrates (NSC) contents
  - NSC analysis of hay is recommended
  - Good quality straw can be fed as a low - NSC forage for up to 50% of the daily feed provided for obese horses
    - **“hay must be introduced into the diet gradually and monitor closely for colic”**
  - **GOOD QUALITY STRAW ONLY**
  - Soaking hay in cold water for at least 60 minutes before feeding to lower water-soluble carbs
  - Feeding hay in slow feeder or divide forage into smaller meals to avoid prolonged fasting
  - Provide mineral/vitamin/protein balancer
    - One low in sugar
Equine Metabolic Syndrome

- Monitor body condition score regularly
  - Reassess every 30 days
- Exercise is recommended unless laminitis is present
  - Can increase weight loss and improve insulin sensitivity
- Decrease stress
- Monitor insulin levels regularly – especially after diet changes

Equine Metabolic Syndrome

Medication

- Thyrox- L (Levothyroxine)
  - Help increase weight loss in obese horses
- Sodium-glucose co-transporter 2 (SGLT2) inhibitors
  - Severe ID and laminitic horses when not responding to other therapies
- Glucophage (Metformin hydrochloride)
  - For persistent hyperinsulinemia, may only be effective for small amount of horses and lose efficacy over time
- Nutritional supplements including chromium, resveratrol, and magnesium

Neoplasia

- Squamous Cell carcinoma and melanomas
  - Increase in occurrence with age
- Squamous cell carcinoma most prevalent
  - Eye, Prepuce, Penis
  - Masses may be singular or multiple
  - Lighten, non-pigmented skin more susceptible
  - Metastasis can occur to local lymph nodes
  - Preputial lesions metastasize to corpus cavernosum penis and inguinal lymph nodes
- 80% of older gray horses have external melanomas
  - Rarely metastasize
Extending or Ending Life

- Older horses can lead healthy lives well into their 30s if well taken care of and medical issues addressed.
- Annual or biannual geriatric assessment necessary to identify treatable problems.
- Increase quality of life by:
  - Reducing stress
  - Improving nutrition
  - Relieving pain
- Chronic airway problems
- Endocrine problems
- Factors that affect euthanasia:
  - Hopeless prognosis/poor quality of life
  - Veterinary advice

Physical exam:
- Dental exam
- Appetite
- Presence of swelling, lameness, or areas of heat
- Multisystemal stiffness or lameness
- Optimization between phases
- Development of cardiac murmurs
- Musculoskeletal

- Baseline health assessment
  - Chemistry profile
  - Adrenocorticotropic hormone levels (ACTH)
  - Fecal levels
  - Fecal examination of parasites

Questions?

Sources

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